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* Prepare a presentation title, the title included on the submission should be suitable for published material.
* Abstract text is limited to 3000 characters (approx 500 words).
* We ask to use 4 core elements: 1) background and aim, 2) methods, 3) results, 4) conclusions. We kindly ask you to use the format below.
* Please ensure the submission has been approved by all authors.
* By submitting an abstract, you agree to be present the 8th and 9th of November at the congress, should your abstract be selected.
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| **Title: Development of a multiplex serological assay for Avian Influenza in poultry**  E. Germeraad1\*, R. Achterberg1, S. Venema-Kemper1, F.J. van der Wal1 and N. Beerens1  *1Wageningen Bioveterinary Research* |
| 1. Background and aim:   Avian Influenza (AI), also called bird flu, is a highly contagious viral disease that affects both domestic and wild birds and can be zoonotic. Avian Influenza viruses (AIV) are classified into subtypes based on two different surface proteins: haemagglutinin (HA) and neuraminidase (NA). In birds, 16 haemagglutinins (1-16) and 9 neuraminidases (1-9) subtypes have been found in numerous combinations [1].  Various serological methods are available to detect antibodies against AIV; enzyme-linked immunoassay (ELISA), agar gel immunodiffusion (AGID) and haemagglutination inhibition test (HI-test) [1]. All these tests require a large volume of serum and are time-consuming, which makes them costly. In this study, we investigated the potential of a multiplex serological assay that is based on Luminex technology. The intended assay enables detection of antibodies against all HA and NA subtypes simultaneously in one single assay, and thereby serotyping of the virus in poultry. This test will require only small volumes of serum, and will be more time- and cost-efficient than the current serological methods.   1. Methods:   Using recombinant techniques multiple variants of the different HA and NA proteins were produced. The HA and NA proteins were covalently bound to spectrally different fluorescent beads, resulting in 54 different beads. When serum and beads are mixed, the antibodies will bind to the coupled HA and NA proteins. Next, the beads are incubated with phycoerythrin labelled anti-chicken IgY and subsequent analysis using a Magpix.  Starting with the validation of the AI multiplex serological assay, 87 individual chicken field samples were tested. Confirmation of the HA results was performed using the HI-test. Results for NA were confirmed using an in-house ELISA that detects all NA-serotypes.   1. Results:   In 92% of the samples, the results of the AI multiplex serological assay were similar with the results of the HI-test and ELISA. Further optimization and validation is ongoing.   1. Conclusion:   To conclude, the multiplex serological assay, based on Luminex technology, is a powerful technique to quickly identify AIV subtypes in poultry sera.  References   1. World Organisation for Animal Health (OIE), 2015, Chapter 2.3.4. Avian Influenza (infection with avian influenza viruses). In: Manual of Diagnostic Tests and Vaccines for terrestrial Animals. Available:   http://www.oie.int/fileadmin/Home/eng/Health\_standards/tahm/2.03.04\_AI.pdf |